Highlights of accomplishments:

Radiation has been used in academic and scientific research and numerous applications including medical use, and has benefited humankind in many ways. To use radiation effectively and safely, radiation protection for patients, workers and the public has been ensured by evaluating the health risk through assessing the radiation dose. This dose assessment requires fundamental data on radionuclides and various types of radiation over a wide energy range. The Society of Nuclear Medicine and Molecular Imaging (SNMMI) and the International Commission on Radiological Protection (ICRP) are leading organizations in the development of methodology for dosimetry calculations, and the SNMMI and ICRP databases have been used all over the world as reference data for dose assessments from radiation exposure.

However, the SNMMI and ICRP databases were developed in the 1980s and have limitations when used for the advanced dose assessments required for the future development of radiation science and technology, including research into innovative diagnosis and treatment using radiopharmaceuticals and development of the high-energy accelerator facilities required to lead cutting-edge research. The development of advanced databases for radiation dosimetry has thus been eagerly awaited in response to these challenges.

In addressing these issues, Dr. Endo developed a method for calculating Auger electron data used for microdosimetry of the order of DNA and nucleus dimensions for targeted radionuclide therapy. Dr. Endo also established a computer simulation method for reproducing complex nuclear reactions of high-energy radiation in the human body. Using these methods, Dr. Endo worked closely with the SNMMI and ICRP to develop new databases for dosimetry calculations in nuclear medicine and radiation protection.

The developed databases are being used internationally as reference data for the foundation of radiation safety in various applications of nuclear medicine, molecular imaging, and microdose clinical trials in drug development, and the use of high-energy accelerator facilities. His achievements are held in high regard by the nuclear medicine and radiation protection communities, and Dr. Endo received the Atomic Energy Society of Japan Award and the Prize for Science and Technology from the Minister of Education, Culture, Sports, Science and Technology.

The Medal with Purple Ribbon is awarded to Dr. Akira Endo for these outstanding accomplishments.